UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R048XA007NM

Site Name: Mountain Shale

Precipitation or Climate Zone: 15 to 30 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site is located in mountainous terrain. Slopes are dominantly moderately steep to steep with gradients varying from 10 to 75 percent where steeper slopes make grazing use by domestic livestock impossible. Topography varies from relatively uniform slopes of considerable length to short, steep, choppy terrain. Mountainous topography in the ponderosa pine zone and shale soils is considered to belong to this site even if separated from the main mountain chain. North and east-facing slopes are generally more productive and tend to grow more tall trees, but in many cases, are not significantly higher in potential or range forage. In some cases, this site is on the dryer, north-facing slopes being forested. Elevation ranges from 7,000 to 9,000 feet above sea level.

Land Form:

1. Mountain slope
2.
3.

Aspect:

1. North-facing
2. East-facing
3.

	Minimum	Maximum
Elevation (feet)	7,000	9,000
Slope (percent)	10	75
Water Table Depth (inches)	N/A	N/A

Flooding:	**Minimum**	**Maximum**
Frequency	N/A	N/A
Duration	N/A	N/A

Ponding:	**Minimum**	**Maximum**
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

High to very high.

CLIMATIC FEATURES

Narrative:

Climate conditions for this site are typical of the lower elevational limits of the Rocky Mountains. Average annual precipitation ranges from 16 to 22 inches. Most of the precipitation received is in the form of rain from heavy thunderstorms during the hottest summer months. Winter and spring moisture is an important facet of this site and determines production of the cool-season species. Summer moisture received during the principal growing season of July, August and September determines the production of the principal warm-season grasses. Summer precipitation accounts for approximately 60 percent of the total annual precipitation, although at a moderately high elevation, the climatic features of this site are not too unlike sites at lower elevations in that precipitation amounts fluctuate greatly from year to year. Annual amounts commonly range from 8 to 35 inches. Spring precipitation in the latter part of March may be sufficient in some years to contribute greatly to the production of both warm and cool-season forage plants.

Air temperatures vary from a monthly mean of 29 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80's during the summer. Winter low temperatures fall below the freezing mark much of the time from mid-September through April. Date of the last killing frost is approximately May 15th. The first killing frost is approximately October 3rd. The dates of the last killing frost and the first killing frost vary from lower elevations to the higher elevation points.

The frost-free season ranges from 90 to 140 days, from mid-May through early October. The frost-free period is important only in the limiting of the production of the warm-season species that are present on the site.

Mountain winds are an important part of the climatic complex of this site, because of their indirect effect on soil and moisture and translocation of seed.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

	Minimum	Maximum
Frost-free period (days):	103	144
Freeze-free period (days):	127	169
Mean annual precipitation (inches):	15	30

Monthly moisture (inches) and temperature (^{0}F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.32	.88	14.2	46.8
February	.33	1.13	16.7	50.0
March	.62	1.79	20.4	55.7
April	.81	1.71	25.6	63.6
May	1.12	2.00	33.3	72.7
June	1.26	2.27	40.6	82.4
July	2.68	4.24	44.9	84.9
August	2.87	4.48	44.0	81.8
September	1.63	1.92	38.1	76.8
October	1.05	1.64	29.2	67.7
November	.56	1.15	20.3	55.6
December	.41	1.06	14.5	48.7

Climate Stations:

				Period		
Station ID	291813	Location	Cimarron 4SW, NM	From: 5/1/1904	To:	12/31/01
Station ID	293488	Location	Gascon, NM	From: 11/18/53	To:	12/31/01
Station ID	296275	Location	Ocate 1N, NM	From: 08/01/60	To:	12/31/01
Station ID	296676	Location	Pecos Ranger Station, NM	From: 01/01/16	To:	12/31/01

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

This site consists of soils that are shallow to moderately deep and are well drained. The surface texture is cobbly silt clay loam, stony loam and stony clay loam soils. They are derived from shale parent material. The effective rooting depth is 12 to 40 inches. Shale and sandstone outcrops are common. Permeability is slow to very slow. Available water-holding capacity is low. The subsoil is typically compacted clay, which restricts root penetration. Soils of this site on the steeper slopes are conducive to the development of geological slides when completely saturated. Runoff is rapid to very rapid, and water erosion hazard is severe. When in a dry condition, the soils require as much as 2 inches of moisture to wet a foot of soil. For this reason, light showers fail to penetrate deep enough to be used for plant growth.

Parent Material Kind: Marine deposits
Parent Material Origin: Shale - unspecified

Surface Texture:

1. Very stony clay loam
2. Cobbly silt clay loam
3. Cobbly loam
4. Stony loam
5. Stony clay loam

Surface Texture Modifier:

1. Cobbly
2. Stone
3.

Subsurface Texture Group: Clayey
Surface Fragments <=3" (% Cover): 15 to 35
Surface Fragments >3" (% Cover): 35 to 60

Subsurface Fragments <=3" (%Volume): 35 to 60
Subsurface Fragments >=3" (%Volume): 35 to 60

	Minimum	Maximum
Drainage Class:	Well	Well
Permeability Class:	Very slow	Moderately slow
Depth (inches):	>10	60
Electrical Conductivity (mmhos/cm):	0.00	2.00
Sodium Absorption Ratio:	0.00	1.00
Soil Reaction (1:1 Water):	6.1	7.8
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	3	6
Calcium Carbonate Equivalent (percent):	N/A	N/A

PLANT COMMUNITIES

Ecological Dynamics of the Site:

Plant Communities and Transitional Pathways (diagram)

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label**: HCPC

Plant Community Narrative: Historic Climax Plant Community
The aspect of this site is a shrub-dominated community; however, 65 to 75 percent of the annual production is made up of grasses and forbs. The vegetation of this site is composed of a mixture of both warm-season and cool-season grasses, forbs and shrubs whose relative composition percentage is dependent upon climatic and grazing factors. Grasses have a relative composition of approximately 65 percent. Shrub species are subdominant and display a percentage composition of about 25 percent; forbs make up approximately 10 to 15 percent of the vegetation complex. Oak brush is the dominant shrub on this site. Scattered, light, open stands of ponderosa pine may give this site a savannah aspect. Pinyon-juniper stands are encountered at the lower elevational limits of this site. Tree species associated with the site are ponderosa pine, pinyon pine and juniper species. Overstory canopy cover is less than 5 percent.

Canopy Cover:	
Trees	<5 %
Shrubs and half shrubs	25 %
Ground Cover (Aveage Percent of Surface Area).	
Grasses & Forbs	20
Bare ground	15
Surface gravel	10
Surface cobble and stone	20
Litter (percent)	10
Litter (average depth in cm.)	4

Plant Community Annual Production (by plant type):

Annual Production (lbs/ac)

Plant Type	Low	RV	High
Grass/Grasslike	325	553	780
Forb	50	85	120
Tree/Shrub/Vine	125	213	300
Lichen			
Moss			
Microbiotic Crusts			
Total	500	850	1,200

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	BOGR2	Blue Grama	102 – 128	102 – 128
2	PASM	Western Wheatgrass	102 – 128	102 – 128
3	SCSC	Little Bluestem	102 – 128	102 – 128
4	BOCU	Sideoats Grama	68 – 85	68 – 85
5	SPAI	Alkali Sacaton	68 – 85	68 – 85
6	MUMO	Mountain Muhly	26 – 43	26 – 43
7	FEAR	Arizona Fescue	26 – 43	26 – 43
8	KOMA	Prairie Junegrass	26 – 43	26 – 43
9	ACHY	Indian Ricegrass	26 – 43	26 – 43
10	HECO26	Needleandthread	26 – 43	26 – 43
11	CAREX	Sedge spp.	26 – 43	26 – 43
12	2GRAM	Other Grasses	26 – 43	26 – 43

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
13	GERAN	Geranium spp.	26 – 43	26 – 43
	TRIFO	Clover spp.		
	ERIOG	Buckwheat spp.		
14	ACMI2	Western Yarrow	26 – 43	26 – 43
	LUPIN	Lupine spp.		
	AGOSE	Dandelion spp.		
	VICIA	Vetch spp.		
	LATHY	Peavine spp.		
	2FORB	Other Forbs		

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
15	QUERC	Oak spp.	102 – 128	102 – 128
16	CEMOP	Hairy Mountainmahogany	26 – 43	26 – 43
	ARTEM	Sagebrush spp.		
	AMUT	Serviceberry		
	SYAL	Snowberry		
17	JUNIP	Juniper spp.	26 – 43	26 – 43
	PIED	Pinyon Pine		
	2SD	Other Shrubs		

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Other species that could appear include: wild rye, pine dropseed, mountain brome, muttongrass, spike muhly, sleepygrass, threeawn spp., currant, broom snakeweed, cinquefoil, groundsel and winterfat.

Plant Growth Curves

Growth Curve ID **3107NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed warm and cool-season grassland with a major component of shrubs and a minor component of forbs.**

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	5	10	10	25	30	12	5	0	0

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitats, which support a resident animal community that is characterized by mule deer, mountain cottontail, rock squirrel, Stephen's woodrat, western harvest mouse and rufous-sided towhee. Elk will use these sites during the winter months.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations	
Soil Series	**Hydrologic Group**
Cueva	D
Midnight	D
Ortez	C
Ponil	D
Rombo	C
Ustochrepts	B, D

Recreational Uses:

This site provides limited recreation potential due to the steep slopes and stoniness of the soil surface. Hunting for mule deer is fair to good.

Wood Products:

Some pinyon-juniper and ponderosa pine can furnish limited firewood and fence posts.

Other Products:

Grazing:

Approximately 75 to 80 percent of the total annual yield are from species that furnish forage for grazing and browsing animals. This site is adapted for late spring, summer and early fall grazing. Distribution of domestic livestock is a problem on this site. All ages and classes of livestock prefer to graze the flatter slopes, leaving the steeper slopes ungrazed. Some of the steeper slopes are not suitable for grazing by domestic livestock because of the high erosion hazard on such soils. Goats would be best suited to graze this site. A younger age of domestic livestock would be better suited to this site due to the steep slopes and surface rock. The large variety of grasses, forbs and shrubs provide a good balanced feed and excellent nutrition for all grazing and browsing animals. Continuous grazing during the growing season will cause the potential plant community to deteriorate. Most of the dominant grasses will decrease as the ecological condition declines. Species most likely to invade under these conditions are ring muhly, rabbitbrush, pingue and Kentucky bluegrass. Species most likely to increase as the ecological conditions decline are Gambel oak, sleepygrass, threeawn spp., broom snakeweed and sagebrush. Oak brush may completely dominate the plant community. A system of deferred grazing, which varies the time and season of grazing and rest in the pastures in successive years, is needed to maintain or to improve a healthy well-balanced plant community.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	**Ac/AUM**
100 - 76	4.5 – 6.7
75 – 51	6.0 – 10.7
50 – 26	8.8 – 16.0
25 – 0	16.0+

Plant Part	Code	Species Preference	Code
Stems	**S**	**None Selected**	**NS**
Leaves	**L**	**Preferred**	**P**
Flowers	**F**	**Desirable**	**D**
Fruits/Seeds	**F/S**	**Undesirable**	**U**
Entire Plant	**EP**	**Not Consumed**	**NC**
Underground Parts	**UP**	**Emergency**	**E**
		Toxic	**T**

Plant Preference by Animal Kind:

Animal Kind: Livestock
Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Mountain Muhly	Muhlenbergia montana	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Prairie Junegrass	Koeleria macrantha	EP	D	D	D	D	D	D	D	D	D	D	D	D
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Sedge	Carex spp.	EP	D	D	D	D	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Peavine	Lathyrus spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U

Animal Kind: Livestock
Animal Type: Horse

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Mountain Muhly	Muhlenbergia montana	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Prairie Junegrass	Koeleria macrantha	EP	D	D	D	D	D	D	D	D	D	D	D	D
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Sedge	Carex spp.	EP	D	D	D	D	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Peavine	Lathyrus spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U

Animal Kind: Livestock
Animal Type: Sheep

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Prairie Junegrass	Koeleria macrantha	EP	U	U	D	D	D	U	U	U	U	U	U	U
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	D	D	D	D	D	D	U
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	D	D	D	D	D	D	P
Sedge	Carex spp.	EP	U	U	D	D	D	U	U	U	U	U	U	U
Mountain Dandelion	Agoseris heterophylla	EP	U	U	D	D	D	D	D	D	U	U	U	U
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Buckwheat	Eriogonum spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Peavine	Lathyrus spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U

Animal Kind: Wildlife
Animal Type: Elk

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Mountain Muhly	Muhlenbergia montana	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Prairie Junegrass	Koeleria macrantha	EP	D	D	D	D	D	D	D	D	D	D	D	D
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Sedge	Carex spp.	EP	D	D	D	D	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Peavine	Lathyrus spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U

Animal Kind: Wildlife
Animal Type: Deer

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Big Sagebrush	Artemisia tridentata	L/S	D	D	D	D	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	P	P	P	P	P	P	P	P	P	P	P	P
Clover	Trifolium spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Vetch	Vicia spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Peavine	Lathyrus spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Oak	Quercus spp.	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative

Similar sites:

Site Name	Site ID	Site Narrative

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

Data Source	# of Records	Sample Period	State	County

Type Locality:

State: **New Mexico**

County: **Colfax, Mora, Rio Arriba, Sandoval, Santa Fe**

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? **Yes** ☐ **No** ☐

General Legal Description: _____

Relationship to Other Established Classifications:

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Rocky Mountains 48 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Colfax, Taos, Mora, San Miguel, and Santa Fe.

Characteristic Soils Are:	
Cueva	Midnight
Ortez	Ponil
Rombo	Ustochrepts
Other Soils included are:	

Site Description Approval:

Author	Date	Approval	Date
Don Sylvester	09/01/78	Don Sylvester	09/01/78

Site Description Revision:

Author	Date	Approval	Date
Elizabeth Wright	09/30/02	George Chavez	2/12/03